ACZ Laboratories, Inc.
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Analytical Report

September 28, 2021

Report to:
Holly Beggy
Hudbay Minerals
5255 E Williams Circle
Suite W1065
Tucson, AZ 85711

cc: David Krizek

Bill to:
Rosemont Copper Company
Hudbay Minerals
5255 E Williams Circle
Suite W1065
Tuscon, AZ 85711

Project ID:
ACZ Project ID: L68443

Holly Beggy:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on September 13, 2021. This project has been assigned to ACZ's project number, L68443. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L68443. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 28, 2021. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

Hudbay Minerals
Project ID:
Sample ID: DI-19 SOUTH-TREE

ACZ Sample ID: ***L68443-01***
Date Sampled: *09/09/21 14:10*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP								09/16/21 12:17	kja
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/17/21 8:30	mfm

Hudbay Minerals
Project ID:
Sample ID: DI-19 SOUTH-TREE

ACZ Sample ID: ***L68443-01***
Date Sampled: *09/09/21 14:10*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.130	B	*	mg/L	0.05	0.25	09/17/21 20:09	jlw
Aluminum, extractable (AB-DTPA)	M6010D ICP	50	<2.5	U	*	mg/Kg	2.5	12.5	09/17/21 1:03	kja
Aluminum, total (3050)	M6010D ICP	103	23500		*	mg/Kg	5.15	25.8	09/18/21 0:14	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/21/21 13:03	bsu
Antimony, extractable (AD-DTPA)	M6020B ICP-MS	50	<0.02	U	*	mg/Kg	0.02	0.1	09/22/21 18:05	bsu
Antimony, total (3050)	M6020B ICP-MS	515	0.519	B	*	mg/Kg	0.206	1.03	09/17/21 14:31	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00108			mg/L	0.0002	0.001	09/21/21 13:03	bsu
Arsenic, extractable (AB-DTPA)	M6020B ICP-MS	50	0.108		*	mg/Kg	0.01	0.05	09/22/21 18:05	bsu
Arsenic, total (3050)	M6020B ICP-MS	515	4.75			mg/Kg	0.103	0.515	09/17/21 14:31	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/21/21 13:03	bsu
Cadmium, extractable (AB-DTPA)	M6020B ICP-MS	50	0.190		*	mg/Kg	0.0025	0.0125	09/22/21 18:05	bsu
Cadmium, total (3050)	M6020B ICP-MS	515	0.763			mg/Kg	0.0258	0.129	09/17/21 14:31	bsu
Calcium (1312)	M6010D ICP	1	14.3			mg/L	0.1	0.5	09/17/21 20:09	jlw
Calcium, extractable (AB-DTPA)	M6010D ICP	50	376			mg/Kg	5	25	09/17/21 1:03	kja
Calcium, total (3050)	M6010D ICP	103	9600			mg/Kg	10.3	51.5	09/18/21 0:14	jlw
Copper (1312)	M6020B ICP-MS	1	0.0164			mg/L	0.0008	0.002	09/21/21 13:03	bsu
Copper, extractable (AB-DTPA)	M6020B ICP-MS	100	46.3		*	mg/Kg	0.08	0.2	09/23/21 13:24	bsu
Copper, total (3050)	M6020B ICP-MS	515	416		*	mg/Kg	0.412	1.03	09/17/21 14:31	bsu
Iron (1312)	M6010D ICP	1	0.247		*	mg/L	0.06	0.15	09/17/21 20:09	jlw
Iron, extractable (AB-DTPA)	M6010D ICP	50	9.78		*	mg/Kg	3	7.5	09/17/21 1:03	kja
Iron, total (3050)	M6010D ICP	103	22000		*	mg/Kg	6.18	15.5	09/18/21 0:14	jlw
Lead (1312)	M6020B ICP-MS	1	0.00023	B	*	mg/L	0.0001	0.0005	09/21/21 13:03	bsu
Lead, extractable (AB-DTPA)	M6020B ICP-MS	50	3.77		*	mg/Kg	0.005	0.025	09/22/21 18:05	bsu
Lead, total (3050)	M6020B ICP-MS	515	23.4			mg/Kg	0.0515	0.258	09/17/21 14:31	bsu
Magnesium (1312)	M6010D ICP	1	1.39		*	mg/L	0.2	1	09/17/21 20:09	jlw
Magnesium, extractable (AB-DTPA)	M6010D ICP	50	107			mg/Kg	10	50	09/17/21 1:03	kja
Magnesium, total (3050)	M6010D ICP	103	6310			mg/Kg	20.6	103	09/18/21 0:14	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/17/21 20:09	jlw
Manganese, extractable (AB-DTPA)	M6010D ICP	50	9.71			mg/Kg	0.5	2.5	09/17/21 1:03	kja
Manganese, total (3050)	M6010D ICP	103	782		*	mg/Kg	1.03	5.15	09/18/21 0:14	jlw
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/17/21 20:09	jlw
Molybdenum, extractable (AB-DTPA)	M6010D ICP	50	<1	U	*	mg/Kg	1	5	09/17/21 1:03	kja
Molybdenum, total (3050)	M6010D ICP	103	4.46	B		mg/Kg	2.06	10.3	09/18/21 0:14	jlw

Hudbay Minerals
Project ID:
Sample ID: DI-19 SOUTH-TREE

ACZ Sample ID: ***L68443-01***
Date Sampled: *09/09/21 14:10*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Nickel (1312)	M6020B ICP-MS	1	0.00044	B	*	mg/L	0.0004	0.001	09/21/21 13:03	bsu
Nickel, extractable (AB-DTPA)	M6020B ICP-MS	50	0.194		*	mg/Kg	0.02	0.05	09/22/21 18:05	bsu
Nickel, total (3050)	M6020B ICP-MS	515	11.8			mg/Kg	0.206	0.515	09/17/21 14:31	bsu
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	09/21/21 13:03	bsu
Selenium, extractable (AB-DTPA)	M6020B ICP-MS	50	0.0178		*	mg/Kg	0.005	0.0125	09/22/21 18:05	bsu
Selenium, total (3050)	M6020B ICP-MS	515	0.218		*	mg/Kg	0.0515	0.129	09/17/21 14:31	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/17/21 20:09	jlw
Zinc, extractable (AB-DTPA)	M6010D ICP	50	7.83		*	mg/Kg	1	2.5	09/17/21 1:03	kja
Zinc, total (3050)	M6010D ICP	103	130		*	mg/Kg	2.06	5.15	09/18/21 0:14	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.9		*	%	0.1	0.5	09/16/21 9:24	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.6		*	%	0.1	0.5	09/16/21 9:24	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.3		*	%	0.1	0.5	09/16/21 9:24	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.944		*	mmhos/cm	0.001	0.01	09/16/21 0:00	zln
Max Particle Size		1	2000		*	um			09/16/21 0:00	zln
Temperature		1	21.4		*	C	0.1	0.1	09/16/21 0:00	zln
Organic Matter (Ignition @ 400)	EPA 600/2-78-054 M3.2.14	1	4.7		*	%	0.3	1	09/15/21 15:00	gkh
pH, (1312)	M9045D/M9040C									
pH			8			Units	0.1	0.1	09/28/21 0:00	ZLN
Temperature			20.9			Units	0.1	0.1	09/28/21 0:00	ZLN
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/16/21 0:00	zln
pH		1	7.5		*	units	0.1	0.1	09/16/21 0:00	zln
Solids, Percent	D2216-80	1	86.9		*	%	0.1	0.5	09/14/21 10:43	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.03	B	*	%	0.01	0.1	09/16/21 9:07	jpb
Texture by Hydrometer	ASA No. 9 Pt. 1 Section 15-5									
Clay		1	30.0		*	%	0.1	0.5	09/16/21 0:00	zln
Sand		1	40.0		*	%	0.1	0.5	09/16/21 0:00	zln
Silt		1	30.0		*	%	0.1	0.5	09/16/21 0:00	zln
Texture Classification		1	clay loam		*				09/16/21 0:00	zln

Hudbay Minerals
Project ID:
Sample ID: DI-19 SOUTH-TREE

ACZ Sample ID: ***L68443-01***
Date Sampled: *09/09/21 14:10*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
AB-DTPA Extraction	ASA No. 9, 3-5.2.3								09/16/21 7:26	gkh
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/14/21 8:50	mep
Digestion - Hot Plate	M3050B ICP								09/16/21 10:14	mep
Digestion - Hot Plate	M3050B ICP-MS								09/16/21 10:14	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/16/21 13:01	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/15/21 8:00	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/15/21 8:00	jpb
Synthetic Precip. Leaching Procedure	M1312								09/14/21 18:07	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: DI-20 TREE

ACZ Sample ID: ***L68443-02***
Date Sampled: *09/09/21 13:45*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP								09/16/21 13:18	kja
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/17/21 8:30	mfm

Hudbay Minerals
Project ID:
Sample ID: DI-20 TREE

ACZ Sample ID: ***L68443-02***
Date Sampled: *09/09/21 13:45*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.061	B	*	mg/L	0.05	0.25	09/17/21 20:21	jlw
Aluminum, extractable (AB-DTPA)	M6010D ICP	50	<2.5	U	*	mg/Kg	2.5	12.5	09/17/21 1:10	kja
Aluminum, total (3050)	M6010D ICP	102	12100		*	mg/Kg	5.1	25.5	09/18/21 0:27	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/21/21 13:04	bsu
Antimony, extractable (AD-DTPA)	M6020B ICP-MS	50	<0.02	U	*	mg/Kg	0.02	0.1	09/22/21 18:08	bsu
Antimony, total (3050)	M6020B ICP-MS	510	0.272	B	*	mg/Kg	0.204	1.02	09/17/21 14:33	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00152			mg/L	0.0002	0.001	09/21/21 13:04	bsu
Arsenic, extractable (AB-DTPA)	M6020B ICP-MS	50	0.0754		*	mg/Kg	0.01	0.05	09/22/21 18:08	bsu
Arsenic, total (3050)	M6020B ICP-MS	510	2.97			mg/Kg	0.102	0.51	09/17/21 14:33	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/21/21 13:04	bsu
Cadmium, extractable (AB-DTPA)	M6020B ICP-MS	50	0.0977		*	mg/Kg	0.0025	0.0125	09/22/21 18:08	bsu
Cadmium, total (3050)	M6020B ICP-MS	510	0.380			mg/Kg	0.0255	0.128	09/17/21 14:33	bsu
Calcium (1312)	M6010D ICP	1	20.4			mg/L	0.1	0.5	09/17/21 20:21	jlw
Calcium, extractable (AB-DTPA)	M6010D ICP	50	422			mg/Kg	5	25	09/17/21 1:10	kja
Calcium, total (3050)	M6010D ICP	102	9710			mg/Kg	10.2	51	09/18/21 0:27	jlw
Copper (1312)	M6020B ICP-MS	1	0.0223			mg/L	0.0008	0.002	09/21/21 13:04	bsu
Copper, extractable (AB-DTPA)	M6020B ICP-MS	50	18.6		*	mg/Kg	0.04	0.1	09/23/21 13:28	bsu
Copper, total (3050)	M6020B ICP-MS	510	196		*	mg/Kg	0.408	1.02	09/17/21 14:33	bsu
Iron (1312)	M6010D ICP	1	<0.06	U	*	mg/L	0.06	0.15	09/17/21 20:21	jlw
Iron, extractable (AB-DTPA)	M6010D ICP	50	7.32	B	*	mg/Kg	3	7.5	09/17/21 1:10	kja
Iron, total (3050)	M6010D ICP	102	14100		*	mg/Kg	6.12	15.3	09/18/21 0:27	jlw
Lead (1312)	M6020B ICP-MS	1	0.00012	B	*	mg/L	0.0001	0.0005	09/21/21 13:04	bsu
Lead, extractable (AB-DTPA)	M6020B ICP-MS	50	2.20		*	mg/Kg	0.005	0.025	09/22/21 18:08	bsu
Lead, total (3050)	M6020B ICP-MS	510	12.0			mg/Kg	0.051	0.255	09/17/21 14:33	bsu
Magnesium (1312)	M6010D ICP	1	2.10		*	mg/L	0.2	1	09/17/21 20:21	jlw
Magnesium, extractable (AB-DTPA)	M6010D ICP	50	91.4			mg/Kg	10	50	09/17/21 1:10	kja
Magnesium, total (3050)	M6010D ICP	102	3780			mg/Kg	20.4	102	09/18/21 0:27	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/17/21 20:21	jlw
Manganese, extractable (AB-DTPA)	M6010D ICP	50	7.32			mg/Kg	0.5	2.5	09/17/21 1:10	kja
Manganese, total (3050)	M6010D ICP	102	384		*	mg/Kg	1.02	5.1	09/18/21 0:27	jlw
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/17/21 20:21	jlw
Molybdenum, extractable (AB-DTPA)	M6010D ICP	50	<1	U	*	mg/Kg	1	5	09/17/21 1:10	kja
Molybdenum, total (3050)	M6010D ICP	102	3.58	B		mg/Kg	2.04	10.2	09/18/21 0:27	jlw

Hudbay Minerals
Project ID:
Sample ID: DI-20 TREE

ACZ Sample ID: ***L68443-02***
Date Sampled: *09/09/21 13:45*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Nickel (1312)	M6020B ICP-MS	1	0.00068	B	*	mg/L	0.0004	0.001	09/21/21 13:04	bsu
Nickel, extractable (AB-DTPA)	M6020B ICP-MS	50	0.131		*	mg/Kg	0.02	0.05	09/22/21 18:08	bsu
Nickel, total (3050)	M6020B ICP-MS	510	6.92			mg/Kg	0.204	0.51	09/17/21 14:33	bsu
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	09/21/21 13:04	bsu
Selenium, extractable (AB-DTPA)	M6020B ICP-MS	50	0.0112	B	*	mg/Kg	0.005	0.0125	09/22/21 18:08	bsu
Selenium, total (3050)	M6020B ICP-MS	510	0.156		*	mg/Kg	0.051	0.128	09/17/21 14:33	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/17/21 20:21	jlw
Zinc, extractable (AB-DTPA)	M6010D ICP	50	5.96		*	mg/Kg	1	2.5	09/17/21 1:10	kja
Zinc, total (3050)	M6010D ICP	102	68.9		*	mg/Kg	2.04	5.1	09/18/21 0:27	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.6		*	%	0.1	0.5	09/16/21 9:48	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.4	B	*	%	0.1	0.5	09/16/21 9:48	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.2		*	%	0.1	0.5	09/16/21 9:48	jpb
Conductivity @25C	SM2510B									
Conductivity		1	1.24		*	mmhos/cm	0.001	0.01	09/16/21 0:00	zln
Max Particle Size		1	2000		*	um			09/16/21 0:00	zln
Temperature		1	21.4		*	C	0.1	0.1	09/16/21 0:00	zln
Organic Matter (Ignition @ 400)	EPA 600/2-78-054 M3.2.14	1	4.4		*	%	0.3	1	09/15/21 15:00	gkh
pH, (1312)	M9045D/M9040C									
pH			7.9			Units	0.1	0.1	09/28/21 0:00	ZLN
Temperature			20.8			Units	0.1	0.1	09/28/21 0:00	ZLN
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/16/21 0:00	zln
pH		1	7.3		*	units	0.1	0.1	09/16/21 0:00	zln
Solids, Percent	D2216-80	1	93.9		*	%	0.1	0.5	09/14/21 13:10	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.05	B	*	%	0.01	0.1	09/16/21 9:18	jpb
Texture by Hydrometer	ASA No. 9 Pt. 1 Section 15-5									
Clay		1	15.0		*	%	0.1	0.5	09/16/21 0:00	zln
Sand		1	65.0		*	%	0.1	0.5	09/16/21 0:00	zln
Silt		1	20.0		*	%	0.1	0.5	09/16/21 0:00	zln
Texture Classification		1	sandy loam		*				09/16/21 0:00	zln

Hudbay Minerals
Project ID:
Sample ID: DI-20 TREE

ACZ Sample ID: ***L68443-02***
Date Sampled: *09/09/21 13:45*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
AB-DTPA Extraction	ASA No. 9, 3-5.2.3								09/16/21 8:18	gkh
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/14/21 8:53	mep
Digestion - Hot Plate	M3050B ICP								09/16/21 11:19	mep
Digestion - Hot Plate	M3050B ICP-MS								09/16/21 11:19	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/16/21 13:02	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/15/21 8:05	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/15/21 8:05	jpb
Synthetic Precip. Leaching Procedure	M1312								09/14/21 21:11	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: DI-21 TREE

ACZ Sample ID: ***L68443-03***
Date Sampled: *09/09/21 11:30*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP								09/16/21 13:39	kja
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/17/21 8:30	mfm

Hudbay Minerals
Project ID:
Sample ID: DI-21 TREE

ACZ Sample ID: ***L68443-03***
Date Sampled: *09/09/21 11:30*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.459		*	mg/L	0.05	0.25	09/17/21 20:25	jlw
Aluminum, extractable (AB-DTPA)	M6010D ICP	50	<2.5	U	*	mg/Kg	2.5	12.5	09/17/21 1:21	kja
Aluminum, total (3050)	M6010D ICP	101	13100		*	mg/Kg	5.05	25.3	09/18/21 0:30	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/21/21 13:10	bsu
Antimony, extractable (AD-DTPA)	M6020B ICP-MS	50	<0.02	U	*	mg/Kg	0.02	0.1	09/22/21 18:12	bsu
Antimony, total (3050)	M6020B ICP-MS	505	0.361	B	*	mg/Kg	0.202	1.01	09/17/21 14:35	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00423			mg/L	0.0002	0.001	09/21/21 13:10	bsu
Arsenic, extractable (AB-DTPA)	M6020B ICP-MS	50	0.156		*	mg/Kg	0.01	0.05	09/22/21 18:12	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	6.28			mg/Kg	0.101	0.505	09/17/21 14:35	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/21/21 13:10	bsu
Cadmium, extractable (AB-DTPA)	M6020B ICP-MS	50	0.0341		*	mg/Kg	0.0025	0.0125	09/22/21 18:12	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	0.329			mg/Kg	0.0253	0.126	09/17/21 14:35	bsu
Calcium (1312)	M6010D ICP	1	9.74			mg/L	0.1	0.5	09/17/21 20:25	jlw
Calcium, extractable (AB-DTPA)	M6010D ICP	50	393			mg/Kg	5	25	09/17/21 1:21	kja
Calcium, total (3050)	M6010D ICP	101	10000			mg/Kg	10.1	50.5	09/18/21 0:30	jlw
Copper (1312)	M6020B ICP-MS	1	0.00694			mg/L	0.0008	0.002	09/21/21 13:10	bsu
Copper, extractable (AB-DTPA)	M6020B ICP-MS	50	3.19		*	mg/Kg	0.04	0.1	09/23/21 13:31	bsu
Copper, total (3050)	M6020B ICP-MS	505	34.6		*	mg/Kg	0.404	1.01	09/17/21 14:35	bsu
Iron (1312)	M6010D ICP	1	0.269		*	mg/L	0.06	0.15	09/17/21 20:25	jlw
Iron, extractable (AB-DTPA)	M6010D ICP	50	5.54	B	*	mg/Kg	3	7.5	09/17/21 1:21	kja
Iron, total (3050)	M6010D ICP	101	17800		*	mg/Kg	6.06	15.2	09/18/21 0:30	jlw
Lead (1312)	M6020B ICP-MS	1	0.00050	B	*	mg/L	0.0001	0.0005	09/21/21 13:10	bsu
Lead, extractable (AB-DTPA)	M6020B ICP-MS	50	1.61		*	mg/Kg	0.005	0.025	09/22/21 18:12	bsu
Lead, total (3050)	M6020B ICP-MS	505	14.3			mg/Kg	0.0505	0.253	09/17/21 14:35	bsu
Magnesium (1312)	M6010D ICP	1	0.86	B	*	mg/L	0.2	1	09/17/21 20:25	jlw
Magnesium, extractable (AB-DTPA)	M6010D ICP	50	87.9			mg/Kg	10	50	09/17/21 1:21	kja
Magnesium, total (3050)	M6010D ICP	101	3600			mg/Kg	20.2	101	09/18/21 0:30	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/17/21 20:25	jlw
Manganese, extractable (AB-DTPA)	M6010D ICP	50	2.18	B		mg/Kg	0.5	2.5	09/17/21 1:21	kja
Manganese, total (3050)	M6010D ICP	101	389		*	mg/Kg	1.01	5.05	09/18/21 0:30	jlw
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/17/21 20:25	jlw
Molybdenum, extractable (AB-DTPA)	M6010D ICP	50	<1	U	*	mg/Kg	1	5	09/17/21 1:21	kja
Molybdenum, total (3050)	M6010D ICP	101	<2.02	U		mg/Kg	2.02	10.1	09/18/21 0:30	jlw

Hudbay Minerals
Project ID:
Sample ID: DI-21 TREE

ACZ Sample ID: ***L68443-03***
Date Sampled: *09/09/21 11:30*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Nickel (1312)	M6020B ICP-MS	1	0.00062	B	*	mg/L	0.0004	0.001	09/21/21 13:10	bsu
Nickel, extractable (AB-DTPA)	M6020B ICP-MS	50	0.104		*	mg/Kg	0.02	0.05	09/22/21 18:12	bsu
Nickel, total (3050)	M6020B ICP-MS	505	7.58			mg/Kg	0.202	0.505	09/17/21 14:35	bsu
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	09/21/21 13:10	bsu
Selenium, extractable (AB-DTPA)	M6020B ICP-MS	50	0.00626	B	*	mg/Kg	0.005	0.0125	09/22/21 18:12	bsu
Selenium, total (3050)	M6020B ICP-MS	505	0.0881	B	*	mg/Kg	0.0505	0.126	09/17/21 14:35	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/17/21 20:25	jlw
Zinc, extractable (AB-DTPA)	M6010D ICP	50	<1	U	*	mg/Kg	1	2.5	09/17/21 1:21	kja
Zinc, total (3050)	M6010D ICP	101	43.5		*	mg/Kg	2.02	5.05	09/18/21 0:30	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.5		*	%	0.1	0.5	09/16/21 10:00	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.2	B	*	%	0.1	0.5	09/16/21 10:00	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	09/16/21 10:00	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.546		*	mmhos/cm	0.001	0.01	09/16/21 0:00	zln
Max Particle Size		1	2000		*	um			09/16/21 0:00	zln
Temperature		1	21.2		*	C	0.1	0.1	09/16/21 0:00	zln
Organic Matter (Ignition @ 400)	EPA 600/2-78-054 M3.2.14	1	0.8	B	*	%	0.3	1	09/15/21 15:00	gkh
pH, (1312)	M9045D/M9040C									
pH			8.4			Units	0.1	0.1	09/28/21 0:00	ZLN
Temperature			20.6			Units	0.1	0.1	09/28/21 0:00	ZLN
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/16/21 0:00	zln
pH		1	7.6		*	units	0.1	0.1	09/16/21 0:00	zln
Solids, Percent	D2216-80	1	97.2		*	%	0.1	0.5	09/14/21 14:24	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.02	B	*	%	0.01	0.1	09/16/21 9:22	jpb
Texture by Hydrometer	ASA No. 9 Pt. 1 Section 15-5									
Clay		1	12.5		*	%	0.1	0.5	09/16/21 0:00	zln
Sand		1	72.5		*	%	0.1	0.5	09/16/21 0:00	zln
Silt		1	15.0		*	%	0.1	0.5	09/16/21 0:00	zln
Texture Classification		1	sandy loam		*				09/16/21 0:00	zln

Hudbay Minerals
Project ID:
Sample ID: DI-21 TREE

ACZ Sample ID: ***L68443-03***
Date Sampled: *09/09/21 11:30*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
AB-DTPA Extraction	ASA No. 9, 3-5.2.3								09/16/21 8:45	gkh
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/14/21 8:56	mep
Digestion - Hot Plate	M3050B ICP								09/16/21 11:41	mep
Digestion - Hot Plate	M3050B ICP-MS								09/16/21 11:41	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/16/21 13:04	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/15/21 8:10	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/15/21 8:10	jpb
Synthetic Precip. Leaching Procedure	M1312								09/15/21 0:14	zln

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

Hudbay Minerals

ACZ Project ID: ***L68443***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Aluminum (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527478													
WG527478ICV	ICV	09/17/21 19:33	II210823-1	2		1.905	mg/L	95	90	110			
WG527478ICB	ICB	09/17/21 19:37				U	mg/L		-0.15	0.15			
WG527145PBS	PBS	09/17/21 20:01				U	mg/L		-0.15	0.15			
WG527145LFB1	LFB	09/17/21 20:05	II210910-2	1.0008		.968	mg/L	97	80	120			
L68443-01MS	MS	09/17/21 20:13	II210910-2	1.0008	.13	1.159	mg/L	103	75	125			
L68443-01MSD	MSD	09/17/21 20:17	II210910-2	1.0008	.13	1.151	mg/L	102	75	125	1	20	
L68444-01DUP	DUP	09/17/21 20:33			.343	.154	mg/L				76	20	RA

Aluminum, extractable (AB-DTPA) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527371													
WG527371ICV	ICV	09/17/21 0:33	II210826-1	2		2.049	mg/L	102	90	110			
WG527371ICB	ICB	09/17/21 0:36				U	mg/L		-0.15	0.15			
WG527204PBS	PBS	09/17/21 0:59				U	mg/Kg		-7.5	7.5			
L68443-01DUP	DUP	09/17/21 1:07			U	U	mg/Kg				0	20	RA
L68443-02AS	AS	09/17/21 1:14	II210910-2	50.04	U	50.25	mg/Kg	100	75	125			
L68443-02ASD	ASD	09/17/21 1:18	II210910-2	50.04	U	51.15	mg/Kg	102	75	125	2	20	

Aluminum, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527480													
WG527480ICV	ICV	09/17/21 23:35	II210823-1	2		2.047	mg/L	102	90	110			
WG527480ICB	ICB	09/17/21 23:39				U	mg/L		-0.15	0.15			
WG527218PBS	PBS	09/18/21 0:03				U	mg/Kg		-15	15			
WG527218LCSS	LCSS	09/18/21 0:07	PCN63759	8130		8806	mg/Kg		3920	12300			
WG527218LCSSD	LCSSD	09/18/21 0:11	PCN63759	8130		8820	mg/Kg		3920	12300	0	20	
L68443-01MS	MS	09/18/21 0:18	II210910-2	103.0824	23500	29911.2	mg/Kg	6219	75	125			M3
L68443-01MSD	MSD	09/18/21 0:23	II210910-2	103.0824	23500	29458	mg/Kg	5780	75	125	2	20	M3

Antimony (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527659													
WG527659ICV	ICV	09/21/21 12:46	MS210727-2	.0201		.02015	mg/L	100	90	110			
WG527659ICB	ICB	09/21/21 12:48				U	mg/L		-0.0012	0.0012			
WG527145PBS	PBS	09/21/21 12:59				U	mg/L		-0.0012	0.0012			
L68443-02MS	MS	09/21/21 13:06	MS210827-2	.01	U	.00987	mg/L	99	75	125			
L68443-02MSD	MSD	09/21/21 13:08	MS210827-2	.01	U	.0098	mg/L	98	75	125	1	20	
L68444-01DUP	DUP	09/21/21 13:17			U	U	mg/L				0	20	RA
WG527145LFB2	LFB	09/21/21 13:19	MS210827-2	.01		.00966	mg/L	97	80	120			

Hudbay Minerals

ACZ Project ID: ***L68443***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Antimony, extractable (AD-DTPA) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527801													
WG527801ICV	ICV	09/22/21 17:52	MS210727-2	.0201		.01858	mg/L	92	90	110			
WG527801ICB	ICB	09/22/21 17:54				U	mg/L		-0.0012	0.0012			
WG527204PBS	PBS	09/22/21 18:03				U	mg/Kg		-0.06	0.06			
L68443-01DUP	DUP	09/22/21 18:06			U	U	mg/Kg				0	20	RA
L68443-03AS	AS	09/22/21 18:14	MS210827-2	.5	U	.51294	mg/Kg	103	75	125			
L68443-03ASD	ASD	09/22/21 18:19	MS210827-2	.5	U	.50302	mg/Kg	101	75	125	2	20	

Antimony, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527473													
WG527473ICV	ICV	09/17/21 14:14	MS210727-2	.0201		.01943	mg/L	97	90	110			
WG527473ICB	ICB	09/17/21 14:16				U	mg/L		-0.0012	0.0012			
WG527218PBS	PBS	09/17/21 14:25				U	mg/Kg		-0.6	0.6			
WG527218LCSS	LCSS	09/17/21 14:27	PCN63759	134		90.46569	mg/Kg		4.56	264			
WG527218LCSSD	LCSSD	09/17/21 14:29	PCN63759	134		88.99535	mg/Kg		4.56	264	2	20	
L68444-01MS	MS	09/17/21 14:42	MS210826-5	5.05	.368	1.80944	mg/Kg	29	75	125			M2
L68444-01MSD	MSD	09/17/21 14:44	MS210826-5	5.05	.368	1.75854	mg/Kg	28	75	125	3	20	M2

Arsenic (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527659													
WG527659ICV	ICV	09/21/21 12:46	MS210727-2	.05		.05007	mg/L	100	90	110			
WG527659ICB	ICB	09/21/21 12:48				U	mg/L		-0.0006	0.0006			
WG527145PBS	PBS	09/21/21 12:59				U	mg/L		-0.0006	0.0006			
L68443-02MS	MS	09/21/21 13:06	MS210827-2	.05005	.00152	.04886	mg/L	95	75	125			
L68443-02MSD	MSD	09/21/21 13:08	MS210827-2	.05005	.00152	.04891	mg/L	95	75	125	0	20	
L68444-01DUP	DUP	09/21/21 13:17			.00337	.00306	mg/L				10	20	
WG527145LFB2	LFB	09/21/21 13:19	MS210827-2	.05005		.047	mg/L	94	80	120			

Arsenic, extractable (AB-DTPA) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527801													
WG527801ICV	ICV	09/22/21 17:52	MS210727-2	.05		.05176	mg/L	104	90	110			
WG527801ICB	ICB	09/22/21 17:54				U	mg/L		-0.0006	0.0006			
WG527204PBS	PBS	09/22/21 18:03				U	mg/Kg		-0.03	0.03			
L68443-01DUP	DUP	09/22/21 18:06			.108	.10783	mg/Kg				0	20	
L68443-03AS	AS	09/22/21 18:14	MS210827-2	2.5025	.156	3.07785	mg/Kg	117	75	125			
L68443-03ASD	ASD	09/22/21 18:19	MS210827-2	2.5025	.156	3.40168	mg/Kg	130	75	125	10	20	MA

Hudbay Minerals

ACZ Project ID: ***L68443***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Arsenic, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527473													
WG527473ICV	ICV	09/17/21 14:14	MS210727-2	.05		.05023	mg/L	100	90	110			
WG527473ICB	ICB	09/17/21 14:16				U	mg/L		-0.0006	0.0006			
WG527218PBS	PBS	09/17/21 14:25				U	mg/Kg		-0.3	0.3			
WG527218LCSS	LCSS	09/17/21 14:27	PCN63759	156		152.25262	mg/Kg		129	183			
WG527218LCSSD	LCSSD	09/17/21 14:29	PCN63759	156		154.30212	mg/Kg		129	183	1	20	
L68444-01MS	MS	09/17/21 14:42	MS210826-5	25.27525	4.63	27.04534	mg/Kg	89	75	125			
L68444-01MSD	MSD	09/17/21 14:44	MS210826-5	25.27525	4.63	30.72935	mg/Kg	103	75	125	13	20	

Cadmium (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527659													
WG527659ICV	ICV	09/21/21 12:46	MS210727-2	.05		.049871	mg/L	100	90	110			
WG527659ICB	ICB	09/21/21 12:48				U	mg/L		-0.00015	0.00015			
WG527145PBS	PBS	09/21/21 12:59				U	mg/L		-0.00015	0.00015			
L68443-02MS	MS	09/21/21 13:06	MS210827-2	.05005	U	.04574	mg/L	91	75	125			
L68443-02MSD	MSD	09/21/21 13:08	MS210827-2	.05005	U	.04564	mg/L	91	75	125	0	20	
L68444-01DUP	DUP	09/21/21 13:17			U	U	mg/L				0	20	RA
WG527145LFB2	LFB	09/21/21 13:19	MS210827-2	.05005		.044741	mg/L	89	80	120			

Cadmium, extractable (AB-DTPA) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527801													
WG527801ICV	ICV	09/22/21 17:52	MS210727-2	.05		.051672	mg/L	103	90	110			
WG527801ICB	ICB	09/22/21 17:54				U	mg/L		-0.00015	0.00015			
WG527204PBS	PBS	09/22/21 18:03				U	mg/Kg		-0.0075	0.0075			
L68443-01DUP	DUP	09/22/21 18:06			.19	.19169	mg/Kg				1	20	
L68443-03AS	AS	09/22/21 18:14	MS210827-2	2.5025	.0341	2.451022	mg/Kg	97	75	125			
L68443-03ASD	ASD	09/22/21 18:19	MS210827-2	2.5025	.0341	2.564978	mg/Kg	101	75	125	5	20	

Cadmium, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527473													
WG527473ICV	ICV	09/17/21 14:14	MS210727-2	.05		.051118	mg/L	102	90	110			
WG527473ICB	ICB	09/17/21 14:16				U	mg/L		-0.00015	0.00015			
WG527218PBS	PBS	09/17/21 14:25				U	mg/Kg		-0.075	0.075			
WG527218LCSS	LCSS	09/17/21 14:27	PCN63759	137		128.25744	mg/Kg		113	160			
WG527218LCSSD	LCSSD	09/17/21 14:29	PCN63759	137		128.93060	mg/Kg		113	160	1	20	
L68444-01MS	MS	09/17/21 14:42	MS210826-5	25.27525	.55	24.938178	mg/Kg	96	75	125			
L68444-01MSD	MSD	09/17/21 14:44	MS210826-5	25.27525	.55	29.162527	mg/Kg	113	75	125	16	20	

Hudbay Minerals

ACZ Project ID: ***L68443***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Calcium (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527478													
WG527478ICV	ICV	09/17/21 19:33	II210823-1	100		98.62	mg/L	99	90	110			
WG527478ICB	ICB	09/17/21 19:37				U	mg/L		-0.3	0.3			
WG527145PBS	PBS	09/17/21 20:01				U	mg/L		-0.3	0.3			
WG527145LFB1	LFB	09/17/21 20:05	II210910-2	67.98972		68.14	mg/L	100	80	120			
L68443-01MS	MS	09/17/21 20:13	II210910-2	67.98972	14.3	82.75	mg/L	101	75	125			
L68443-01MSD	MSD	09/17/21 20:17	II210910-2	67.98972	14.3	82.74	mg/L	101	75	125	0	20	
L68444-01DUP	DUP	09/17/21 20:33			8.9	9.77	mg/L				9	20	

Calcium, extractable (AB-DTPA) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527371													
WG527371ICV	ICV	09/17/21 0:33	II210826-1	100		101.2	mg/L	101	90	110			
WG527371ICB	ICB	09/17/21 0:36				U	mg/L		-0.3	0.3			
WG527204PBS	PBS	09/17/21 0:59				6.02	mg/Kg		-15	15			
L68443-01DUP	DUP	09/17/21 1:07			376	383.15	mg/Kg				2	20	
L68443-02AS	AS	09/17/21 1:14	II210910-2	3399.486	422	3775	mg/Kg	99	75	125			
L68443-02ASD	ASD	09/17/21 1:18	II210910-2	3399.486	422	3889.5	mg/Kg	102	75	125	3	20	

Calcium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527480													
WG527480ICV	ICV	09/17/21 23:35	II210823-1	100		101.2	mg/L	101	90	110			
WG527480ICB	ICB	09/17/21 23:39				U	mg/L		-0.3	0.3			
WG527218PBS	PBS	09/18/21 0:03				U	mg/Kg		-30	30			
WG527218LCSS	LCSS	09/18/21 0:07	PCN63759	4760		4550	mg/Kg		3890	5640			
WG527218LCSSD	LCSSD	09/18/21 0:11	PCN63759	4760		5017	mg/Kg		3890	5640	10	20	
L68443-01MS	MS	09/18/21 0:18	II210910-2	7002.94116	9600	15645.7	mg/Kg	86	75	125			
L68443-01MSD	MSD	09/18/21 0:23	II210910-2	7002.94116	9600	15975.3	mg/Kg	91	75	125	2	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527283													
WG527283PBS	PBS	09/16/21 9:00				U	%		-0.3	0.3			
WG527283LCSS	LCSS	09/16/21 9:12	PCN63155	4.35		4.4	%	101	80	120			
L68443-01DUP	DUP	09/16/21 9:36			2.9	3	%				3	20	

Carbon, total inorganic (TIC) ASA No. 9 29-2.2.4 (calc TC - TOC)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527283													
WG527283PBS	PBS	09/16/21 9:00				U	%		-0.3	0.3			
L68443-01DUP	DUP	09/16/21 9:36			.6	.8	%				29	20	RA

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527283													
WG527283PBS	PBS	09/16/21 9:00				U	%		-0.3	0.3			
L68443-01DUP	DUP	09/16/21 9:36			2.3	2.2	%				4	20	

Hudbay Minerals

ACZ Project ID: ***L68443***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Conductivity @25C SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527388													
L68444-08DUP	DUP	09/17/21 4:18			.312	.269	mmhos/cm				15	20	

Copper (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527659													
WG527659ICV	ICV	09/21/21 12:46	MS210727-2	.05		.05046	mg/L	101	90	110			
WG527659ICB	ICB	09/21/21 12:48				U	mg/L		-0.0024	0.0024			
WG527145PBS	PBS	09/21/21 12:59				U	mg/L		-0.0024	0.0024			
L68443-02MS	MS	09/21/21 13:06	MS210827-2	.05	.0223	.06903	mg/L	93	75	125			
L68443-02MSD	MSD	09/21/21 13:08	MS210827-2	.05	.0223	.06844	mg/L	92	75	125	1	20	
L68444-01DUP	DUP	09/21/21 13:17			.0156	.01388	mg/L				12	20	
WG527145LFB2	LFB	09/21/21 13:19	MS210827-2	.05		.04668	mg/L	93	80	120			

Copper, extractable (AB-DTPA) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527883													
WG527883ICV	ICV	09/23/21 13:11	MS210727-2	.05		.0527	mg/L	105	90	110			
WG527883ICB	ICB	09/23/21 13:13				U	mg/L		-0.0024	0.0024			
WG527204PBS	PBS	09/23/21 13:22				U	mg/Kg		-0.12	0.12			
L68443-01DUP	DUP	09/23/21 13:26			46.3	46.96682	mg/Kg				1	20	
L68443-03AS	AS	09/23/21 13:33	MS210827-2	2.5	3.19	5.63988	mg/Kg	98	75	125			
L68443-03ASD	ASD	09/23/21 13:38	MS210827-2	2.5	3.19	5.43853	mg/Kg	90	75	125	4	20	

Copper, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527473													
WG527473ICV	ICV	09/17/21 14:14	MS210727-2	.05		.05238	mg/L	105	90	110			
WG527473ICB	ICB	09/17/21 14:16				U	mg/L		-0.0024	0.0024			
WG527218PBS	PBS	09/17/21 14:25				U	mg/Kg		-1.2	1.2			
WG527218LCSS	LCSS	09/17/21 14:27	PCN63759	54.9		53.36907	mg/Kg		46.1	63.6			
WG527218LCSSD	LCSSD	09/17/21 14:29	PCN63759	54.9		53.20929	mg/Kg		46.1	63.6	0	20	
L68444-01MS	MS	09/17/21 14:42	MS210826-5	25.25	284	309.81021	mg/Kg	102	75	125			
L68444-01MSD	MSD	09/17/21 14:44	MS210826-5	25.25	284	299.15211	mg/Kg	60	75	125	4	20	M3

Iron (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527478													
WG527478ICV	ICV	09/17/21 19:33	II210823-1	2		1.897	mg/L	95	90	110			
WG527478ICB	ICB	09/17/21 19:37				U	mg/L		-0.18	0.18			
WG527145PBS	PBS	09/17/21 20:01				U	mg/L		-0.18	0.18			
WG527145LFB1	LFB	09/17/21 20:05	II210910-2	1.0001		.99	mg/L	99	80	120			
L68443-01MS	MS	09/17/21 20:13	II210910-2	1.0001	.247	1.079	mg/L	83	75	125			
L68443-01MSD	MSD	09/17/21 20:17	II210910-2	1.0001	.247	1.085	mg/L	84	75	125	1	20	
L68444-01DUP	DUP	09/17/21 20:33			.215	.107	mg/L				67	20	RA

Hudbay Minerals

ACZ Project ID: ***L68443***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, extractable (AB-DTPA) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527371													
WG527371ICV	ICV	09/17/21 0:33	II210826-1	2		2.026	mg/L	101	90	110			
WG527371ICB	ICB	09/17/21 0:36				U	mg/L		-0.18	0.18			
WG527204PBS	PBS	09/17/21 0:59				U	mg/Kg		-9	9			
L68443-01DUP	DUP	09/17/21 1:07			9.78	9.405	mg/Kg				4	20	RA
L68443-02AS	AS	09/17/21 1:14	II210910-2	50.005	7.32	56.35	mg/Kg	98	75	125			
L68443-02ASD	ASD	09/17/21 1:18	II210910-2	50.005	7.32	58.05	mg/Kg	101	75	125	3	20	

Iron, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527480													
WG527480ICV	ICV	09/17/21 23:35	II210823-1	2		2.007	mg/L	100	90	110			
WG527480ICB	ICB	09/17/21 23:39				U	mg/L		-0.18	0.18			
WG527218PBS	PBS	09/18/21 0:03				U	mg/Kg		-18	18			
WG527218LCSS	LCSS	09/18/21 0:07	PCN63759	14100		15400	mg/Kg		8470	19700			
WG527218LCSSD	LCSSD	09/18/21 0:11	PCN63759	14100		15640	mg/Kg		8470	19700	2	20	
L68443-01MS	MS	09/18/21 0:18	II210910-2	103.0103	22000	22268.6	mg/Kg	261	75	125			M3
L68443-01MSD	MSD	09/18/21 0:23	II210910-2	103.0103	22000	22031.7	mg/Kg	31	75	125	1	20	M3

Lead (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527659													
WG527659ICV	ICV	09/21/21 12:46	MS210727-2	.05		.05008	mg/L	100	90	110			
WG527659ICB	ICB	09/21/21 12:48				U	mg/L		-0.0003	0.0003			
WG527145PBS	PBS	09/21/21 12:59				U	mg/L		-0.0003	0.0003			
L68443-02MS	MS	09/21/21 13:06	MS210827-2	.05005	.00012	.0473	mg/L	94	75	125			
L68443-02MSD	MSD	09/21/21 13:08	MS210827-2	.05005	.00012	.04716	mg/L	94	75	125	0	20	
L68444-01DUP	DUP	09/21/21 13:17			.0003	.00015	mg/L				67	20	RA
WG527145LFB2	LFB	09/21/21 13:19	MS210827-2	.05005		.04583	mg/L	92	80	120			

Lead, extractable (AB-DTPA) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527801													
WG527801ICV	ICV	09/22/21 17:52	MS210727-2	.05		.05121	mg/L	102	90	110			
WG527801ICB	ICB	09/22/21 17:54				U	mg/L		-0.0003	0.0003			
WG527204PBS	PBS	09/22/21 18:03				U	mg/Kg		-0.015	0.015			
L68443-01DUP	DUP	09/22/21 18:06			3.77	3.79058	mg/Kg				1	20	
L68443-03AS	AS	09/22/21 18:14	MS210827-2	2.5025	1.61	4.00805	mg/Kg	96	75	125			
L68443-03ASD	ASD	09/22/21 18:19	MS210827-2	2.5025	1.61	4.10373	mg/Kg	100	75	125	2	20	

Hudbay Minerals

ACZ Project ID: ***L68443***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Lead, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527473													
WG527473ICV	ICV	09/17/21 14:14	MS210727-2	.05		.05128	mg/L	103	90	110			
WG527473ICB	ICB	09/17/21 14:16				U	mg/L		-0.0003	0.0003			
WG527218PBS	PBS	09/17/21 14:25				U	mg/Kg		-0.15	0.15			
WG527218LCSS	LCSS	09/17/21 14:27	PCN63759	130		131.86256	mg/Kg		107	152			
WG527218LCSSD	LCSSD	09/17/21 14:29	PCN63759	130		133.56237	mg/Kg		107	152	1	20	
L68444-01MS	MS	09/17/21 14:42	MS210826-5	25.27525	17.9	43.82527	mg/Kg	103	75	125			
L68444-01MSD	MSD	09/17/21 14:44	MS210826-5	25.27525	17.9	48.92623	mg/Kg	123	75	125	11	20	

Magnesium (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527478													
WG527478ICV	ICV	09/17/21 19:33	II210823-1	100		95.75	mg/L	96	90	110			
WG527478ICB	ICB	09/17/21 19:37				U	mg/L		-0.6	0.6			
WG527145PBS	PBS	09/17/21 20:01				U	mg/L		-0.6	0.6			
WG527145LFB1	LFB	09/17/21 20:05	II210910-2	49.99828		48.03	mg/L	96	80	120			
L68443-01MS	MS	09/17/21 20:13	II210910-2	49.99828	1.39	49.8	mg/L	97	75	125			
L68443-01MSD	MSD	09/17/21 20:17	II210910-2	49.99828	1.39	49.79	mg/L	97	75	125	0	20	
L68444-01DUP	DUP	09/17/21 20:33			.96	1.01	mg/L				5	20	RA

Magnesium, extractable (AB-DTPA) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527371													
WG527371ICV	ICV	09/17/21 0:33	II210826-1	100		99.37	mg/L	99	90	110			
WG527371ICB	ICB	09/17/21 0:36				U	mg/L		-0.6	0.6			
WG527204PBS	PBS	09/17/21 0:59				U	mg/Kg		-30	30			
L68443-01DUP	DUP	09/17/21 1:07			107	107.85	mg/Kg				1	20	
L68443-02AS	AS	09/17/21 1:14	II210910-2	2499.914	91.4	2506.5	mg/Kg	97	75	125			
L68443-02ASD	ASD	09/17/21 1:18	II210910-2	2499.914	91.4	2555.5	mg/Kg	99	75	125	2	20	

Magnesium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527480													
WG527480ICV	ICV	09/17/21 23:35	II210823-1	100		98.2	mg/L	98	90	110			
WG527480ICB	ICB	09/17/21 23:39				U	mg/L		-0.6	0.6			
WG527218PBS	PBS	09/18/21 0:03				U	mg/Kg		-60	60			
WG527218LCSS	LCSS	09/18/21 0:07	PCN63759	2320		2257	mg/Kg		1760	2880			
WG527218LCSSD	LCSSD	09/18/21 0:11	PCN63759	2320		2284	mg/Kg		1760	2880	1	20	
L68443-01MS	MS	09/18/21 0:18	II210910-2	5149.82284	6310	10990.1	mg/Kg	91	75	125			
L68443-01MSD	MSD	09/18/21 0:23	II210910-2	5149.82284	6310	10948.9	mg/Kg	90	75	125	0	20	

Hudbay Minerals

ACZ Project ID: ***L68443***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Manganese (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527478													
WG527478ICV	ICV	09/17/21 19:33	II210823-1	2		1.899	mg/L	95	90	110			
WG527478ICB	ICB	09/17/21 19:37				U	mg/L		-0.03	0.03			
WG527145PBS	PBS	09/17/21 20:01				U	mg/L		-0.03	0.03			
WG527145LFB1	LFB	09/17/21 20:05	II210910-2	.5005		.482	mg/L	96	80	120			
L68443-01MS	MS	09/17/21 20:13	II210910-2	.5005	U	.483	mg/L	97	75	125			
L68443-01MSD	MSD	09/17/21 20:17	II210910-2	.5005	U	.484	mg/L	97	75	125	0	20	
L68444-01DUP	DUP	09/17/21 20:33			U	U	mg/L				0	20	RA

Manganese, extractable (AB-DTPA) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527371													
WG527371ICV	ICV	09/17/21 0:33	II210826-1	2		1.998	mg/L	100	90	110			
WG527371ICB	ICB	09/17/21 0:36				U	mg/L		-0.03	0.03			
WG527204PBS	PBS	09/17/21 0:59				U	mg/Kg		-1.5	1.5			
L68443-01DUP	DUP	09/17/21 1:07			9.71	10.75	mg/Kg				10	20	
L68443-02AS	AS	09/17/21 1:14	II210910-2	25.025	7.32	31.625	mg/Kg	97	75	125			
L68443-02ASD	ASD	09/17/21 1:18	II210910-2	25.025	7.32	32.66	mg/Kg	101	75	125	3	20	

Manganese, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527480													
WG527480ICV	ICV	09/17/21 23:35	II210823-1	2		1.996	mg/L	100	90	110			
WG527480ICB	ICB	09/17/21 23:39				U	mg/L		-0.03	0.03			
WG527218PBS	PBS	09/18/21 0:03				1.14	mg/Kg		-3	3			
WG527218LCSS	LCSS	09/18/21 0:07	PCN63759	269		268.8	mg/Kg		221	317			
WG527218LCSSD	LCSSD	09/18/21 0:11	PCN63759	269		323.2	mg/Kg		221	317	18	20	RL
L68443-01MS	MS	09/18/21 0:18	II210910-2	51.5515	782	768.483	mg/Kg	-26	75	125			M3
L68443-01MSD	MSD	09/18/21 0:23	II210910-2	51.5515	782	764.981	mg/Kg	-33	75	125	0	20	M3

Molybdenum (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527478													
WG527478ICV	ICV	09/17/21 19:33	II210823-1	2		1.95	mg/L	98	90	110			
WG527478ICB	ICB	09/17/21 19:37				U	mg/L		-0.06	0.06			
WG527145PBS	PBS	09/17/21 20:01				U	mg/L		-0.06	0.06			
WG527145LFB1	LFB	09/17/21 20:05	II210910-2	.501		.478	mg/L	95	80	120			
L68443-01MS	MS	09/17/21 20:13	II210910-2	.501	U	.483	mg/L	96	75	125			
L68443-01MSD	MSD	09/17/21 20:17	II210910-2	.501	U	.487	mg/L	97	75	125	1	20	
L68444-01DUP	DUP	09/17/21 20:33			U	U	mg/L				0	20	RA

Hudbay Minerals

ACZ Project ID: ***L68443***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Molybdenum, extractable (AB-DTPA) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527371													
WG527371ICV	ICV	09/17/21 0:33	II210826-1	2		2.051	mg/L	103	90	110			
WG527371ICB	ICB	09/17/21 0:36				U	mg/L		-0.06	0.06			
WG527204PBS	PBS	09/17/21 0:59				U	mg/Kg		-3	3			
L68443-01DUP	DUP	09/17/21 1:07			U	U	mg/Kg				0	20	RA
L68443-02AS	AS	09/17/21 1:14	II210910-2	25.05	U	24.295	mg/Kg	97	75	125			
L68443-02ASD	ASD	09/17/21 1:18	II210910-2	25.05	U	25.505	mg/Kg	102	75	125	5	20	

Molybdenum, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527480													
WG527480ICV	ICV	09/17/21 23:35	II210823-1	2		2.048	mg/L	102	90	110			
WG527480ICB	ICB	09/17/21 23:39				U	mg/L		-0.06	0.06			
WG527218PBS	PBS	09/18/21 0:03				U	mg/Kg		-6	6			
WG527218LCSS	LCSS	09/18/21 0:07	PCN63759	95.4		94.82	mg/Kg		76.4	114			
WG527218LCSSD	LCSSD	09/18/21 0:11	PCN63759	95.4		94.59	mg/Kg		76.4	114	0	20	
L68443-01MS	MS	09/18/21 0:18	II210910-2	51.603	4.46	48.153	mg/Kg	85	75	125			
L68443-01MSD	MSD	09/18/21 0:23	II210910-2	51.603	4.46	47.256	mg/Kg	83	75	125	2	20	

Nickel (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527659													
WG527659ICV	ICV	09/21/21 12:46	MS210727-2	.05		.05138	mg/L	103	90	110			
WG527659ICB	ICB	09/21/21 12:48				U	mg/L		-0.0012	0.0012			
WG527145PBS	PBS	09/21/21 12:59				U	mg/L		-0.0012	0.0012			
L68443-02MS	MS	09/21/21 13:06	MS210827-2	.05	.00068	.04722	mg/L	93	75	125			
L68443-02MSD	MSD	09/21/21 13:08	MS210827-2	.05	.00068	.04749	mg/L	94	75	125	1	20	
L68444-01DUP	DUP	09/21/21 13:17			U	U	mg/L				0	20	RA
WG527145LFB2	LFB	09/21/21 13:19	MS210827-2	.05		.04667	mg/L	93	80	120			

Nickel, extractable (AB-DTPA) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527801													
WG527801ICV	ICV	09/22/21 17:52	MS210727-2	.05		.0528	mg/L	106	90	110			
WG527801ICB	ICB	09/22/21 17:54				U	mg/L		-0.0012	0.0012			
WG527204PBS	PBS	09/22/21 18:03				U	mg/Kg		-0.06	0.06			
L68443-01DUP	DUP	09/22/21 18:06			.194	.19917	mg/Kg				3	20	RA
L68443-03AS	AS	09/22/21 18:14	MS210827-2	2.5	.104	2.51641	mg/Kg	96	75	125			
L68443-03ASD	ASD	09/22/21 18:19	MS210827-2	2.5	.104	2.69111	mg/Kg	103	75	125	7	20	

Hudbay Minerals

ACZ Project ID: ***L68443***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Nickel, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527473													
WG527473ICV	ICV	09/17/21 14:14	MS210727-2	.05		.0514	mg/L	103	90	110			
WG527473ICB	ICB	09/17/21 14:16				U	mg/L		-0.0012	0.0012			
WG527218PBS	PBS	09/17/21 14:25				U	mg/Kg		-0.6	0.6			
WG527218LCSS	LCSS	09/17/21 14:27	PCN63759	53.9		51.8969	mg/Kg		44.5	63.3			
WG527218LCSSD	LCSSD	09/17/21 14:29	PCN63759	53.9		51.28441	mg/Kg		44.5	63.3	1	20	
L68444-01MS	MS	09/17/21 14:42	MS210826-5	25.25	9.7	31.89597	mg/Kg	88	75	125			
L68444-01MSD	MSD	09/17/21 14:44	MS210826-5	25.25	9.7	35.91793	mg/Kg	104	75	125	12	20	

Organic Matter (Ignition @ 400) EPA 600/2-78-054 M3.2.14

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527205													
L68443-01DUP	DUP	09/15/21 15:00			4.7	4.8	%				2	20	
WG527205PBS	PBS	09/15/21 15:00				U	%		-0.3	0.3			

Percent Clay ASA No. 9 Pt. 1 Section 15-5

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527293													
L68136-06DUP	DUP	09/16/21 4:35			7.5	7.5	%				0	20	

Percent Sand ASA No. 9 Pt. 1 Section 15-5

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527293													
L68136-06DUP	DUP	09/16/21 4:35			80	80	%				0	20	

Percent Silt ASA No. 9 Pt. 1 Section 15-5

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527293													
L68136-06DUP	DUP	09/16/21 4:35			12.5	12.5	%				0	20	

pH, Saturated Paste EPA 600/2-78-054 section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527388													
WG527388ICV	ICV	09/16/21 17:18	PCN63115	4.01		4	units	100	3.9	4.1			
L68444-08DUP	DUP	09/17/21 4:18			8.1	8.08	units				0	20	

Selenium (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527659													
WG527659ICV	ICV	09/21/21 12:46	MS210727-2	.05		.05031	mg/L	101	90	110			
WG527659ICB	ICB	09/21/21 12:48				.00017	mg/L		-0.0003	0.0003			
WG527145PBS	PBS	09/21/21 12:59				U	mg/L		-0.0003	0.0003			
L68443-02MS	MS	09/21/21 13:06	MS210827-2	.05	U	.04617	mg/L	92	75	125			
L68443-02MSD	MSD	09/21/21 13:08	MS210827-2	.05	U	.04605	mg/L	92	75	125	0	20	
L68444-01DUP	DUP	09/21/21 13:17			.00019	.00015	mg/L				24	20	RA
WG527145LFB2	LFB	09/21/21 13:19	MS210827-2	.05		.04553	mg/L	91	80	120			

Hudbay Minerals

ACZ Project ID: ***L68443***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Selenium, extractable (AB-DTPA) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527801													
WG527801ICV	ICV	09/22/21 17:52	MS210727-2	.05		.05064	mg/L	101	90	110			
WG527801ICB	ICB	09/22/21 17:54				.00019	mg/L		-0.0003	0.0003			
WG527204PBS	PBS	09/22/21 18:03				U	mg/Kg		-0.015	0.015			
L68443-01DUP	DUP	09/22/21 18:06			.0178	.01794	mg/Kg				1	20	RA
L68443-03AS	AS	09/22/21 18:14	MS210827-2	2.5	.00626	3.36747	mg/Kg	134	75	125			M1
L68443-03ASD	ASD	09/22/21 18:19	MS210827-2	2.5	.00626	3.82019	mg/Kg	153	75	125	13	20	M1

Selenium, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527473													
WG527473ICV	ICV	09/17/21 14:14	MS210727-2	.05		.04999	mg/L	100	90	110			
WG527473ICB	ICB	09/17/21 14:16				.00011	mg/L		-0.0003	0.0003			
WG527218PBS	PBS	09/17/21 14:25				U	mg/Kg		-0.15	0.15			
WG527218LCSS	LCSS	09/17/21 14:27	PCN63759	167		161.91786	mg/Kg		132	201			
WG527218LCSSD	LCSSD	09/17/21 14:29	PCN63759	167		164.28463	mg/Kg		132	201	1	20	
L68444-01MS	MS	09/17/21 14:42	MS210826-5	12.625	.146	10.61613	mg/Kg	83	75	125			
L68444-01MSD	MSD	09/17/21 14:44	MS210826-5	12.625	.146	12.52734	mg/Kg	98	75	125	17	20	

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527111													
WG527111PBS	PBS	09/14/21 9:30				U	%		-0.1	0.1			
L68443-01DUP	DUP	09/14/21 11:57			86.9	86.7	%				0	20	

Sulfur, total ASTM D-4239-85C, LECO Furnace

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527282													
WG527282PBS	PBS	09/16/21 9:00				U	%		-0.03	0.03			
WG527282LCSS	LCSS	09/16/21 9:03	PCN63155	4.01		3.41	%	85	80	120			
L68443-01MS	MS	09/16/21 9:11	PCN63758	1.3	.03	1.34	%	101	80	120			
L68443-01DUP	DUP	09/16/21 9:15			.03	.04	%				29	20	RA

Zinc (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527478													
WG527478ICV	ICV	09/17/21 19:33	II210823-1	2		1.922	mg/L	96	90	110			
WG527478ICB	ICB	09/17/21 19:37				U	mg/L		-0.06	0.06			
WG527145PBS	PBS	09/17/21 20:01				U	mg/L		-0.06	0.06			
WG527145LFB1	LFB	09/17/21 20:05	II210910-2	.50045		.505	mg/L	101	80	120			
L68443-01MS	MS	09/17/21 20:13	II210910-2	.50045	U	.506	mg/L	101	75	125			
L68443-01MSD	MSD	09/17/21 20:17	II210910-2	.50045	U	.509	mg/L	102	75	125	1	20	
L68444-01DUP	DUP	09/17/21 20:33			U	U	mg/L				0	20	RA

Hudbay Minerals

ACZ Project ID: ***L68443***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Zinc, extractable (AB-DTPA) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527371													
WG527371ICV	ICV	09/17/21 0:33	II210826-1	2		2.027	mg/L	101	90	110			
WG527371ICB	ICB	09/17/21 0:36				U	mg/L		-0.06	0.06			
WG527204PBS	PBS	09/17/21 0:59				U	mg/Kg		-3	3			
L68443-01DUP	DUP	09/17/21 1:07			7.83	8.41	mg/Kg				7	20	RA
L68443-02AS	AS	09/17/21 1:14	II210910-2	25.0225	5.96	31.015	mg/Kg	100	75	125			
L68443-02ASD	ASD	09/17/21 1:18	II210910-2	25.0225	5.96	32.31	mg/Kg	105	75	125	4	20	

Zinc, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527480													
WG527480ICV	ICV	09/17/21 23:35	II210823-1	2		2.027	mg/L	101	90	110			
WG527480ICB	ICB	09/17/21 23:39				U	mg/L		-0.06	0.06			
WG527218PBS	PBS	09/18/21 0:03				U	mg/Kg		-6	6			
WG527218LCSS	LCSS	09/18/21 0:07	PCN63759	158		156.3	mg/Kg		128	188			
WG527218LCSSD	LCSSD	09/18/21 0:11	PCN63759	158		156.1	mg/Kg		128	188	0	20	
L68443-01MS	MS	09/18/21 0:18	II210910-2	51.54635	130	177.881	mg/Kg	93	75	125			
L68443-01MSD	MSD	09/18/21 0:23	II210910-2	51.54635	130	176.645	mg/Kg	90	75	125	1	20	

Hudbay Minerals ACZ Project ID: ***L68443***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68443-01	WG527478	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527371	Aluminum, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527801	Antimony, extractable (AD-DTPA)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527473	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527801	Arsenic, extractable (AB-DTPA)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527659	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527283	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG527473	Copper, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527478	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527371	Iron, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

Hudbay Minerals ACZ Project ID: ***L68443***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG527478	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527371	Molybdenum, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527801	Nickel, extractable (AB-DTPA)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527801	Selenium, extractable (AB-DTPA)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527282	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527371	Zinc, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Hudbay Minerals ACZ Project ID: ***L68443***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68443-02	WG527478	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527371	Aluminum, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527801	Antimony, extractable (AD-DTPA)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527473	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527801	Arsenic, extractable (AB-DTPA)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527659	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527283	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG527473	Copper, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527478	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527371	Iron, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

Hudbay Minerals

ACZ Project ID: ***L68443***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG527478	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527371	Molybdenum, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527801	Nickel, extractable (AB-DTPA)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527801	Selenium, extractable (AB-DTPA)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527282	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527371	Zinc, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Hudbay Minerals

ACZ Project ID: ***L68443***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68443-03	WG527478	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527371	Aluminum, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527801	Antimony, extractable (AD-DTPA)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527473	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527801	Arsenic, extractable (AB-DTPA)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527659	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527283	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG527473	Copper, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527478	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527371	Iron, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

Hudbay Minerals

ACZ Project ID: ***L68443***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG527478	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527371	Molybdenum, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527801	Nickel, extractable (AB-DTPA)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527801	Selenium, extractable (AB-DTPA)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527282	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527371	Zinc, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.	
Antimony, extractable (AD-DTPA)	M6020B ICP-MS
Cadmium, extractable (AB-DTPA)	M6020B ICP-MS
Copper, extractable (AB-DTPA)	M6020B ICP-MS
Lead, extractable (AB-DTPA)	M6020B ICP-MS
Nickel, extractable (AB-DTPA)	M6020B ICP-MS
Selenium (1312)	M6020B ICP-MS
Selenium, extractable (AB-DTPA)	M6020B ICP-MS
Selenium, total (3050)	M6020B ICP-MS
The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Antimony, extractable (AD-DTPA)	M6020B ICP-MS
Cadmium, extractable (AB-DTPA)	M6020B ICP-MS
Copper, extractable (AB-DTPA)	M6020B ICP-MS
Lead, extractable (AB-DTPA)	M6020B ICP-MS
Nickel, extractable (AB-DTPA)	M6020B ICP-MS

Soil Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.	
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
Clay	ASA No. 9 Pt. 1 Section 15-5
Conductivity @25C	SM2510B
Organic Matter (Ignition @ 400)	EPA 600/2-78-054 M3.2.14
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2
Sand	ASA No. 9 Pt. 1 Section 15-5
Silt	ASA No. 9 Pt. 1 Section 15-5
Solids, Percent	D2216-80
Sulfur, total	ASTM D-4239-85C, LECO Furnace
Texture Classification	ASA No. 9 Pt. 1 Section 15-5
The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
Clay	ASA No. 9 Pt. 1 Section 15-5
Conductivity @25C	SM2510B
Organic Matter (Ignition @ 400)	EPA 600/2-78-054 M3.2.14
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2
Sand	ASA No. 9 Pt. 1 Section 15-5
Silt	ASA No. 9 Pt. 1 Section 15-5
Solids, Percent	D2216-80
Sulfur, total	ASTM D-4239-85C, LECO Furnace
Texture Classification	ASA No. 9 Pt. 1 Section 15-5

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hudbay Minerals

ACZ Project ID: L68443
Date Received: 09/13/2021 16:02
Received By:
Date Printed: 9/14/2021

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
NA35912	23.8	NA	15	N/A

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hudbay Minerals

ACZ Project ID:	L68443
Date Received:	09/13/2021 16:02
Received By:	
Date Printed:	9/14/2021

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L68443

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Holly Beggy
Company: Hudbay Minerals
E-mail: holly.beggy@hudbayminerals.com
Address: 5255 E. Williams Circle, Suite 1065
Telephone: 520-343-5174

Copy of Report to:

Name: David Krizek
Company: david.krizek@hudbayminerals.com
E-mail: 5255 E. Williams Circle, Suite 1065
Telephone: 520-495-3527

Invoice to:

Name: Lionelyn Garcia
Company: Hudbay Minerals
E-mail: rosemontinvoices@hudbayminerals.c
Address: 5255 E. Williams Circle, Suite 1065
Telephone: 520-495-3545

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Holly Beggy **Sampler's Site Information** **State** AZ **Zip code** 85629 **Time Zone** AZ

***Sampler's Signature:** Holly Beggy

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: 2021-SOILS
PO#:
Reporting state for compliance testing: No
Check box if samples include NRC licensed material? [ ]

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE	TIME	Matrix	# of Containers	Drainage-1 (Under Plant)	Drainage 1-2-3-4	Ina Road WWTP-Soil	Plant Tissue				
D1-19SOUTH-Tree	9/9/21	2:10	SO	1	X							
D1-20 Tree		1:45	SO	1	X							
D1-21		11:30	SO	1	X							
D1-22		8:10	SO	1	X							
D1-23		10:50	SO	1	X							
D1-24		10:10	SO	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

~~Samples have been sieved to 4mm with a #5 sieve~~ JHB

Rush

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Holly Beggy Holly Beggy	9/9/21 3:35	[illegible] 9/13/21	1160

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L68443 Chain of Custod